

What is claimed is:

1. A substantially pure Claspin polypeptide characterized as:
 - (a) specifically interacting with a chK1 protein;
 - (b) having SQ/TQ motifs
 - (c) having an isoelectric point of about 4.5; and
 - (d) having at least one nuclear localization signal.
2. The polypeptide of claim 1, wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:4.
3. A substantially pure polypeptide having an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:4, or conservative variants thereof.
4. A substantially pure polypeptide having an amino acid sequence that is about 70% homologous to the polypeptide of claim 3.
5. An isolated polynucleotide encoding a polypeptide of claim 1.
6. A substantially pure polypeptide having the contiguous amino acid sequences LAAVSDLNPNAPR (SEQ ID NO:6) or YLADGDLHSDGPGR (SEQ ID NO:7).
7. An isolated polynucleotide selected from the group consisting of:
 - (a) a polynucleotide encoding a polypeptide having an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:4;
 - (b) a polynucleotide of (a), wherein T can be U;
 - (c) a polynucleotide complementary to (a) or (b);
 - (d) a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:3; and
 - (e) degenerate variants of (a), (b), (c) or (d).

8. An isolated polynucleotide fragment having at least 15 continuous bases that hybridizes to a polynucleotide selected from the group consisting of:

- (a) a polynucleotide encoding a polypeptide having an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:4;
- (b) a polynucleotide of (a), wherein T can be U;
- (c) a polynucleotide complementary to (a) or (b);
- (d) a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:3; and
- (e) degenerate variants of (a), (b), (c) or (d).

9. An isolated polynucleotide having at least 15 continuous bases that hybridizes to a polynucleotide selected from the group consisting of:

- (a) a polynucleotide as set forth in nucleic acid residues 1-331, 799-903, 1232-1543, 2147-2486 or 2964-4756 of SEQ ID NO:3;
- (b) a polynucleotide of (a), wherein T can be U;
- (c) a polynucleotide complementary to (a) or (b);
- (d) a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:3; and
- (e) degenerate variants of (a), (b), (c) or (d).

10. An isolated polynucleotide, wherein said polynucleotide is according selected from:

- (a) a polynucleotide having a nucleic acid sequence set forth in SEQ ID NO:5;
- (b) a polynucleotide complementary to (a); and
- (c) a fragment of (a) or (b).

11. An expression vector comprising a polynucleotide of claim 8.

12. The expression vector of claim 11, wherein the vector is virus-derived.

13. The expression vector of claim 12, wherein the vector is plasmid-derived.

14. A host cell comprising a vector of claim 11.

15. A method for producing a polypeptide comprising the steps of:
- (a) culturing a host cell of claim 14 under conditions suitable for the expression of the polypeptide; and
 - (b) recovering the polypeptide from the host cell culture.
16. A method for identifying a compound that modulates cell cycle progression comprising:
- (a) incubating a compound and a cell expressing a Claspin protein and a chk1 protein under conditions sufficient to permit the compound to interact with the components;
 - (b) comparing cell cycle progression in the cell incubated with the compound with the cell cycle progression of a cell not incubated with the compound, wherein a difference in progression through the cell cycle is indicative of a compound that modulates cell cycle progression.
17. The method of claim 16, wherein the Claspin protein is a human Claspin.
18. The method of claim 16, wherein the compound is selected from the species consisting of a peptide, a peptidomimetic, a polypeptide, a pharmaceutical, a chemical compound, a polynucleotide and an antibody.
19. A method for modulating cell cycle progression in a cell providing to the cell a reagent that affects the activity or expression of a Claspin polypeptide, thereby modulating cell cycle progression.
20. The method of claim 19, wherein modulation of cell cycle progression is inhibition or a reduction in progression.
21. The method of claim 19, wherein the compound is selected from the species consisting of a peptide, a peptidomimetic, a polypeptide, a pharmaceutical, a chemical compound, a polynucleotide, and an antibody.

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